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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/835,491	04/17/2001	Kinya Ozawa	109137	5417

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EXAMINER

DUONG, THOI V

ART UNIT PAPER NUMBER

2871

DATE MAILED: 10/23/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/835,491

Applicant(s)

OZAWA ET AL.

Examiner

Thoi V Duong

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 April 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 ~~is~~/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 ~~is~~/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bos et al. (USPN 6,141,074).

As shown in Fig. 1, Bos discloses a pixel area 10 of an active matrix liquid crystal display (LCD) device (col. 1, lines 15-18), comprising:

first and second substrates, the first substrate 14 having a surface proximate the second substrate, the second substrate 16 being a surface proximate the first substrate; an alignment film (not shown) disposed at each of the surfaces of the first and second substrates (col. 4, lines 1-65);

liquid crystal 12 disposed between the first and second substrates;

wherein a pretilt angle due to the alignment film is 0.5° to 30° for liquid crystal having positive dielectric anisotropy (col. 6, lines 33-37);

wherein the alignment film includes one of silicon oxide and silicon nitride (col. 8, lines 14-26).

Although Bos does not disclose the structure of the LCD device in details, it would have been obvious to one having ordinary skill in the art that the active matrix LCD device of Bos comprises a plurality of scanning lines; a plurality of data lines; pixel

areas defined by the scanning lines and the data lines; a switching element provided in each pixel area; and a pixel electrode provided in each pixel area.

3. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bos et al. (USPN 6,141,074) in view of Hattori et al. (Pub. No. US 2002/0085154 A1).

Bos discloses a LCD device that is basically the same as that recited in claim 3 except for a relationship between a thickness of the liquid crystal and a space between the pixel electrodes. As shown in Figs. 1(a) and 1(b), Hattori discloses a LCD device comprising liquid crystal layer 122 having positive dielectric anisotropy (page 7, paragraph 124), an opposed substrate 105, an array substrate 106, switching elements 123, a plurality of scanning lines 126, a plurality of data lines 181, alignment layers 129 and 191, and a plurality of pixel electrodes 128 which are spaced at intervals of about 3 micrometers (page 7, paragraphs 121, 122). Hattori also discloses that a thickness between the two substrates is about 5 micrometers (the diameter of spacers) (page 8, paragraph 148). Furthermore, Hattori discloses that by just shortening the spacing between the pixel electrodes, the transition proceeds between the pixel electrodes more smoothly, expanding across the space between the pixels and this spacing is more preferably within the range of 1 micrometer to 5 micrometers (page 8, paragraph 137). Accordingly, if a thickness between the two substrates is d and a space defined between the pixel electrodes is L , a ratio d/L is at least 1. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the LCD device of Bos with the teaching of Hattori by forming the two substrates and the pixel electrodes such that a ratio of a gap between the substrates and a spacing

between the pixel electrodes is at least 1 for enabling a reliable transition of alignment within the display pixels.

4. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bos et al. (USPN 6,141,074) in view of Miyatake et al. (USPN 5,092,664).

Bos discloses a LCD device that is basically the same as that recited in claim 6 except for a projection type display apparatus employing such LCD device. As shown in Fig. 1. Miyatake discloses a projection type display apparatus, comprising:

- a light source 15;
- a light modulating device that modulates light emitted from the light source, the light modulating device including a liquid crystal device 17; and
- a projection lens 18 that projects the light modulated by the light modulating device.

Fig. 2 shows a sectional view of the liquid crystal device 17 wherein alignment films 31, 32 are rubbed in order to align the molecules axes of the liquid crystal molecules at a pretilt angle. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ the LCD device of Bos in the projection type display apparatus of Miyatake so as to obtain a display with high picture quality.

5. Claims 4, 5, 7, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bos et al. (USPN 6,141,074) in view of Ichikawa et al. (USPN 6,339,459 B1).

Bos discloses a LCD device that is basically the same as that recited in claims 4, 5, 7, and 8 except for a color projection type display apparatus employing such LCD

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device. As shown in Figs. 1A-1C, Ichikawa discloses a projection type display apparatus comprising:

a light source 1308;

a light modulating device that modulates light emitted from the light source, the light modulating device including the liquid crystal device 1302 that modulates light into color beams of red, green and blue display portions (col. 6, lines 3-49); and

a projection lens 1301 that projects the light modulated by the light modulating device.

Fig. 4 shows a LCD device comprising pixel electrodes 1326 of R, G, and B colors formed of Al (light-reflecting metal electrode) and a liquid crystal layer 1325 maintained in predetermined alignment by alignment layers (co. 8, lines 25-30). Ichikawa also discloses in prior art that the LCD device will be used not only for the personal computers, but also for workstations and televisions for home use (col. 1, lines 11-23). Accordingly, by having the LCD device of Bos with color pixels, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ this device in the projection type display apparatus of Ichikawa so as to obtain a display with much more symmetric viewing angle distribution, good gray scale capability and very high contrast.

Conclusion


6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thoi V. Duong whose telephone number is (703) 308-3171. The examiner can normally be reached on Monday-Friday from 8:00 am to 4:30 pm.

Thoi Duong

10/18/2002



William L. Sikes
Supervisory Patent Examiner
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